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THE EVOLUTION OF THE SMOKE YIELD OF HUNGARIAN CIGARETTES

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SUMMARY

The objective of this study was to examine the technological brand development and other factors which account for the decreases that have occurred in the tar, nicotine and CO deliveries from Hungarian cigarettes. Cigarette consumption trends dating back to 1950 will be presented. Statistical evaluation of mainstream smoke deliveries during 1985 to 1990 will be made.

Cigarette consumption in Hungary increased almost linearly with time from 1950 to 1980. Increasing attention has been given to the deliveries and composition of smoke.

Production of filter cigarettes started in 1962 and produced the first significant change in mainstream composition of Hungarian cigarettes. From that date market proportion of filter cigarettes has increased annually and exceeded 90 % in 1989.

In the 1970's brands appeared with multi-section filters containing active carbon, and later on various additives. Currently the larger part of the dominating brands are multifilter cigarettes. This paper gives a brief review of filter development, introduction of filter ventilation and results from the latest brand development. It also indicates those directions of cigarette production development by which smoke tar content was reduced.

The analysis shows that tar content of mainstream smoke was reduced by about 20 % compared to 1985. A smaller reduction was experienced in nicotine content, while the CO content did not change substantially.

Further decreases in smoke composition could be achieved by spreading of new brands. Introduction of these on the market is hindered, partly by the extremely strict advertisement restriction and partly by the unfavourable prices.

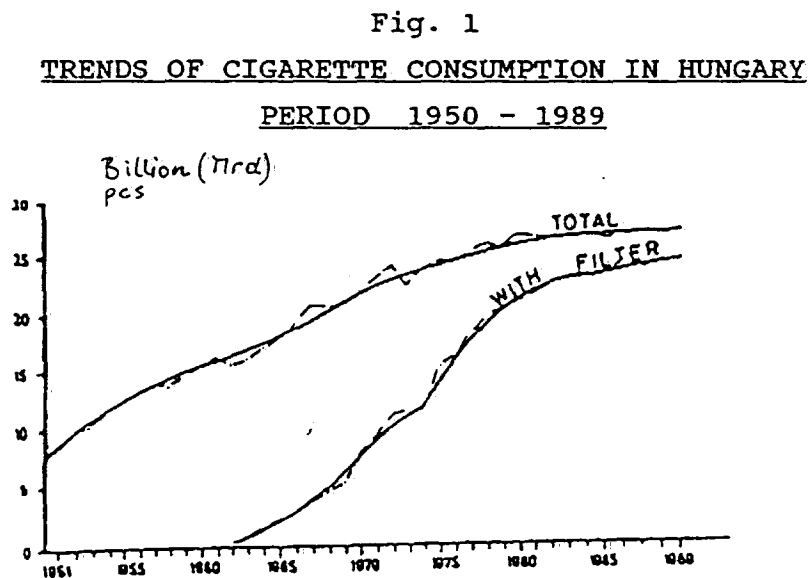
INTRODUCTION

99 % of tobacco consumption in Hungary consists of different cigarette brands.

Taking the average daily cigarette consumption into consideration, the number of smokers in Hungary is approximately 4 million, which is almost 40 % of the total population. Smoking is especially wide-spread among the working population which shows how much the population as a whole is concerned. According to our experiences and to consumption data the propaganda against smoking has not shown a considerable effect so far. Cigarette consumption in Hungary has been between 25.6 to 26.9 billion pieces per year during the last ten years. A reasonable alternative to the attempt of changing the smoking habits would be to lower the amount of smoke constituents of the different cigarette brands.

RESULTS AND DISCUSSION

The first figure illustrates cigarette consumption from 1950 until today and the change of the rate of filter tipped cigarettes within the total consumption.



The first section of the line, illustrating the total consumption, grew in a linear way until the end of the 1970's when the rate of growth began to decrease and, practically, this has not changed

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during the last few years. Consumption per head has reached and amount where we can talk about a saturation level.

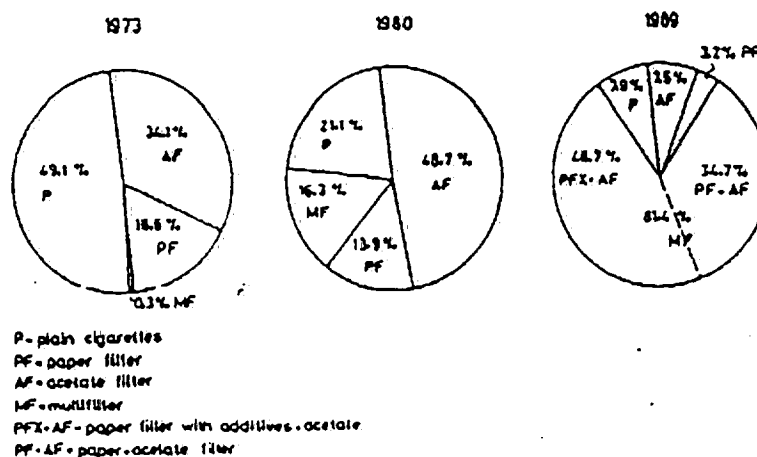
The considerable price rises of the last few years have caused only short and temporary changes. These facts justify and support also from a social standpoint the main research target of the Hungarian tobacco industry to increase the consumer's choice in the low-tar cigarette segment.

The first filter-tipped cigarette brand appeared in 1962 and was followed by more and more others as a result of a target-oriented development of new brands. How fast filter-tipped brands became universal is shown by the following facts. The rate of filter-tipped cigarettes in the market was more than 50 % at the end of the 1970's. This rate grew over 80 % in the 1980's. In 1989, 92,1 % of all cigarettes were filter-tipped.

The range of filter-tipped cigarettes was widened from the beginning of the 1970's by cigarettes with combined filters, which we call multi-filter tipped cigarettes. It is a special feature of the Hungarian cigarette market that the rate of cigarettes with multi-filters is rather high compared to other countries.

The second figure illustrates the change in cigarette consumption according to the type of filters. It was in 1973 that the first multi-filter tipped cigarette containing activated carbon appeared and proved to be a great success in the market later on.

Fig. 2
MARKET SHARE (%) OF CIGARETTES WITH DIFFERENT
FILTER CONSTRUCTION IN HUNGARY



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In 1980 acetate filter tips ruled the market by 48,7 %; the demand for cigarettes without filters and with paper filter tips only decreased. The rate of cigarettes with multi-filter tips containing activated carbon was already 16,3 % at this time. In 1989 the rate of cigarettes with multi-filter tips reached 81,4 %, and the rate of those containing also activated carbon, or other additives, was 46,7 %. Research and development of new brands and new production techniques were very active - according to demands - in the field of developing combined filters and filters containing various additives.

These various additives were primarily used to selectively filtering individual components of the mainstream smoke.

Besides the production of filters the range of the milder products was widened by the Hungarian Tobacco Industry from the end of the 1970's by brands which have been made with porous cigarette paper, taking advantage of the paper's improved burning characteristics. The first cigarette with reduced nicotine content appeared in the 1970's, also serving to meet the demands of a certain market segment. This kind of development was considerably promoted by work done in the Tobacco Research Institute to reduce the nicotine content in tobacco. As a result of this the range of products with less than 1 mg nicotine content per cigarette has considerably widened since then.

The use of air for the dilution of smoke has brought a great change in the development of low-tar cigarettes. The first brand with ventilated filter, the "Blue Symphony", was introduced on the market in 1982.

The use of filter ventilation enabled - besides the further reduction of the tar and nicotine content - the reduction of gaseous smoke components, primarily carbon monoxide.

The degree of filter ventilation of presently produced cigarettes varies between 20 to 50 %.

Besides the development of new brands - which employs agricultural and industrial research results in a more and more purposeful way -

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the development of new production processes within the industry has also played an important role in the reduction of the level of smoke constituents.

The mutual interdependence of brand and production development has always been strong, but today it is even stronger. The production development has been considerably influenced by the beginning of the production of foreign licensed products from the 1970's.

At the moment the Hungarian tobacco industry produces more than 1.3 billions of licensed cigarettes, which is 5 % of the total Hungarian consumption. With the growth of the production of licensed cigarettes not only the demand for the improvement of cigarette makers and packing machines has increased but also that of tobacco cutting machines and the processing technology. As a result of these improvements the amount of tobacco filled in the cigarettes decreased which, naturally, also meant a reduction in the smoke delivery of cigarettes.

The greatest change introduced into the processes preparatory to cigarette production was the employment of the "expansion technique" in the last few years. The equipment needed was imported, but now there is also a Hungarian machine in the test stage, which uses less energy and contains no moving parts. According to our experiences so far, the efficiency of expansion in the case of cut rolled stems is 30 to 35 %, while for rags it is 20 to 30 %, depending on the quality of the tobacco.

The decrease in the amount of tobacco used is well illustrated by the fact that at the moment there is ca. 6 % less tobacco in the cigarettes than there used to be in 1985. The ongoing automation of processing, especially the regulation of the massflow, may also lead to the decrease of the amount of tobacco needed. Technical improvement has begun in this field as well, partly based on Hungarian results of research.

The turning of processing waste into reconstituted sheet has become important in both economic and sanitary respects. The technology of producing reconstituted sheet is being modernised.

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This was preceded by a significant improvement of the processing lines.

The modernization of sanitary research, tobacco processing and cigarette production increased the demand for buying more appliances and improving the ones we have, in the field of development on the one hand, and in the field of quality control, on the other.

Since 1985, there has been a regular control of smoke delivery covering all brands produced by the industry. The tar, nicotine and carbon monoxide content in the mainstream smoke of cigarettes produced in Hungary has changed as shown by table one.

TABLE 1
AVERAGE TAR NICOTINE AND CO CONTENT OF
HUNGARIAN CIGARETTES

	1985.	1986.	1987.	1988.	1989.
TAR mg/cig.	23,29	22,10	21,0	20,3	18,7
NICOTINE mg/cig.	1,17	1,10	1,09	1,12	1,05
CO mg/cig.	19,40	20,2	20,4	19,8	19,1

Compared to 1985, as a result of development :

- the tar content has decreased strongly, with about 20 %; the 5 to 10 % decrease in the nicotine content is not as strong as this, but it is still a favourable tendency;
- the constancy of the carbon monoxide content can be put down to the fact that, although, the number of brands with ventilated filter grew from 7 to 12 between 1985 and 1989, their rate on the market during the same time grew only from 5,6 % to 6,3 %.

The results in the development of new brands can be well illustrated by the characteristics of the mainstream smoke of the two most popular cigarette families, the "Sopianae" and the

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"Symphonia" as well as that of the latest type of the first Hungarian low nicotine cigarette brand, called "Helikon".

The "Sopianae" products' share on the market was 42,9 % while that of the "Symphonia" products was 35,8 %. In short, these brands ruled more than three-quarters of the Hungarian market in 1989.

As it can be seen from table 2 the most recent version, that is, "Sopianae Nivo", contains only half as much tar and nicotine as "Sopianae Multi-filter" brand.

TABLE 2
MAINSTREAM SMOKE COMPONENTS OF SOPIANAE
CIGARETTE BRANDS IN 1989

BRAND	TAR mg/cig.	NICOTINE mg/cig.	CO mg/cig.
Sopianae Multifilter (80 mm)	18,2	0,99	19,8
Sopianae 100	13,3	0,81	17,1
Sopianae Nivó 100	9,5	0,59	15,5

As similar development can be observed in case of the other most popular product, "Symphonia" (table 3). With this cigarette family a significant reduction of the CO-content could also be achieved.

TABLE 3
MAINSTREAM SMOKE COMPONENTS OF SYMPHONIA
CIGARETTE BRANDS IN 1989

BRAND	TAR mg/cig.	NICOTINE mg/cig.	CO mg/cig.
Symphonia red	19,4	1,16	20,2
Symphonia blue	16,1	1,10	16,2
Symphonia yellow	9,1	0,65	9,8

In the fourth table we find data about the smoke of "Helikon"

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- the first Hungarian low nicotine cigarette - and its most recent development.

This "White Helikon" also proves that our newest products belong to what is called the "low tar" category, even according to international standards.

TABLE 4
MAINSTREAM SMOKE COMPONENTS OF HELIKON
CIGARETTE BRANDS IN 1989

BRAND	TAR mg/cig.	NICOTINE mg/cig.	CO mg/cig.
Helikon	18,6	0,86	17,5
Helikon white	11,5	0,55	10,7

Unfortunately, the share of these products on the market is still low today, just a few percent. Today, the greatest hindrance in the way of introducing these new products, which are lower in smoke constituents, is the misconstrued prohibition of advertisement. A much more favourable and comforting state could be achieved by purposeful advertisement. Because of the low share of these new products on the market, the mean values of the main smoke components decrease only to a little extent in the average Hungarian consumption, especially the CO content.

Keeping the interests of the smokers in mind, it would be very useful if sanitary inspectors would not only prohibit, at last, but would take into consideration the interrelationship between the various social, economic and sanitary factors.

These factors exist, even if we do not want to know about them. It is also undoubtable that it is the basic right of every human being to know what one gets for one's money.

Those who satisfy existing social demands should enjoy competition neutrality in order to have developmental opportunities which serve decent purposes. And all this is impossible without information or informative advertisement !

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